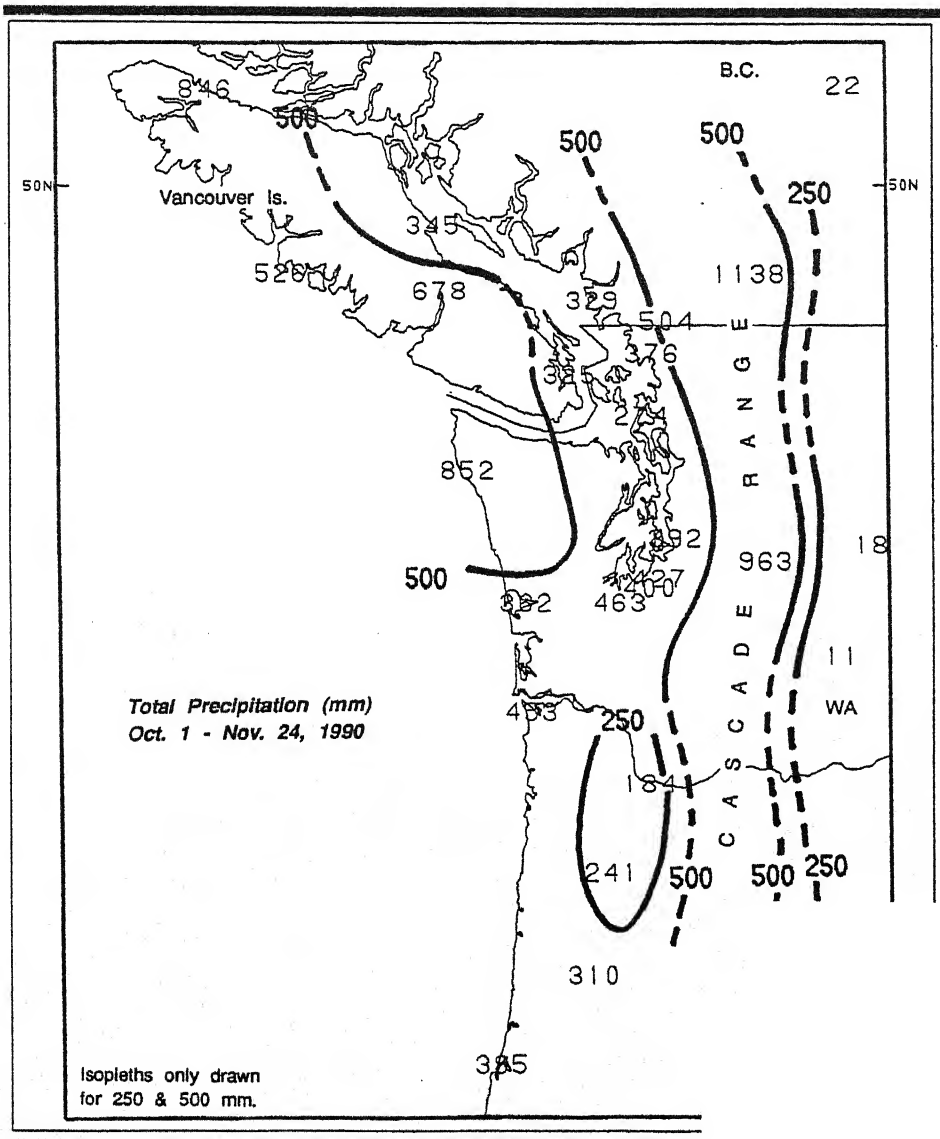
CLIMATE ANALYSIS CENTER

WEEKLY CLIMATE BULLETIN

No. 90/47 **Washington, DC** **November 24, 1990**



The 1990 - 1991 rainy season (approximately Oct. - Apr.) in the Pacific Northwest has gotten off to a quick but destructive start. Since October 1, many locations in the Pacific Northwest and southwestern British Columbia have measured between 125% and 325% of the normal precipitation, with 8 - week totals approaching 1150 mm [45"]. The ample precipitation generated by a subtropical storm track dubbed the "Pineapple Express" has produced severe flooding in the region for the second time in two weeks. A massive storm during Nov. 9 - 12 caused tens of millions of dollars in damages in western Washington and Vancouver Island, and the combinatio[illegible] 9 in[illegible] ing [illegible] erv[illegible]

UNITED STATES DEPAR
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NATIONAL WEATHER SERVICE–NATI
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WEEKLY CLIMATE BULLETIN

This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

- *Highlights of major climatic events and anomalies.*
- *U.S. climatic conditions for the previous week.*
- *U.S. apparent temperatures (summer) or wind chill (winter).*
- *U.S. cooling degree days (summer) or heating degree days (winter).*
- *Global two–week temperature anomalies.*
- *Global four–week precipitation anomalies.*
- *Global monthly temperature and precipitation anomalies.*
- *Global three–month precipitation anomalies (once a month).*
- *Global twelve–month precipitation anomalies (every three months).*
- *Global three–month temperature anomalies for winter and summer seasons.*
- *Special climate summaries, explanations, etc. (as appropriate).*

Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Climate Analysis Center via the Global Telecommunications System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.

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GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF APRIL 10, 1993

ʾaii:

STILL VERY DRY.

ɪr no rain fell on the Islands as six–week moisture deficits from 50 to 130 mm [9 weeks].

ıdor and Northern Peru:

/ARM AND WET CONDITIONS DEVELOP.

)0 mm of rain drenched the region and temperatures aver- °C to 2°C above normal as unusually warm and wet weather ped. According to press reports, floods claimed more than zen lives, and hundreds of individuals lost their homes [4].

ern Brazil:

MORE DRY WEATHER.

d showers brought up to 50 mm of rain to a few locations, but reas received little or none. Six–week precipitation short- ached 300 mm in some areas [8 weeks].

tral South America:

MPERATURES MODERATE, BUT DRYNESS PERSISTS.

ratures averaged 3°C to 5°C below normal, abruptly ending rm spell in Argentina [Ended at 4 weeks]. Up to 80 mm of aked Uruguay and east–central Argentina, but farther west, vere again below 30 mm [Ending at 4 weeks].

5. Northern Europe:

WIDESPREAD RAINS BRING RELIEF.

Between 30 and 70 mm of rain inundated much of the region, providing relief from prolonged dryness; however, most of Scandinavia and southern and eastern Germany received less than 20 mm [Ending at 19 weeks].

6. South–Central Europe and Northeastern Africa:

ANOTHER COLD SNAP.

Temperatures averaged 2°C to 3°C below normal as abnormally cold air returned to the region [19 weeks].

7. Southern Africa:

VERY LOW RAINFALL TOTALS REPORTED AGAIN.

Little or no precipitation was observed, allowing six–week moisture deficits to reach 150 mm in parts of South Africa and approach 200 mm in Mozambique [6 weeks].

8. Pakistan and Northwestern India:

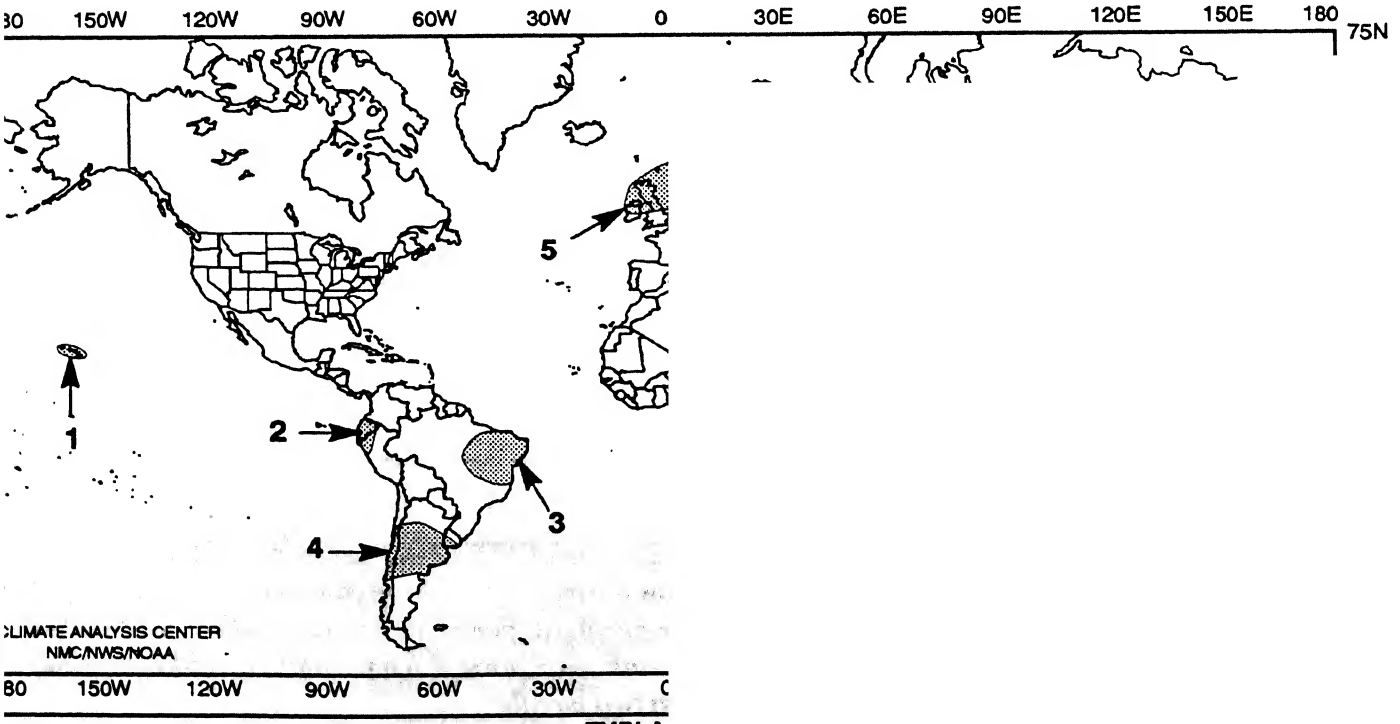
CHILLY CONDITIONS CONTINUE.

Temperatures averaged 2°C to 3°C below normal as unusually cool weather again prevailed [4 weeks].

9. Northeastern Australia:

ABNORMALLY DRY WEATHER REMAINS.

Little or no precipitation was reported across interior Queensland; however, as much as 90 mm of rain fell along the coast. Six–week moisture deficits climbed to 450 mm at some locations [9 weeks].



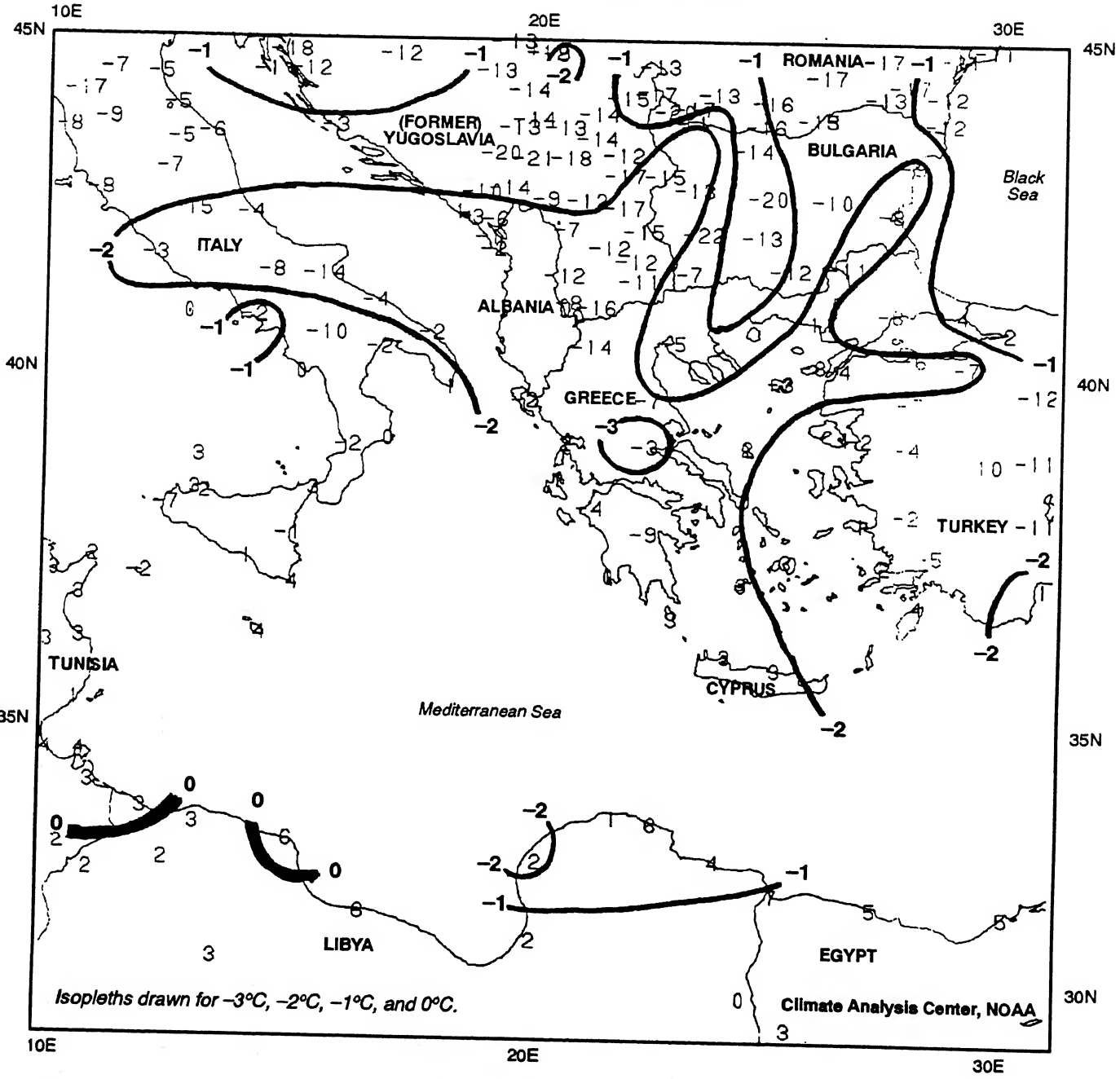
XT: Approximate duration of anomalies is in brackets. Precipitatio

.P: Approximate locations of major anomalies and episodic event temperature anomalies, four week precipitation anomalies, lon

GLOBAL CLIMATE HIGHLIGHTS FEATURE

PLOTTED VALUES: EXTREME MINIMUM TEMPERATURES (°C)
CONTOURS: DEPARTURE FROM NORMAL AVERAGE TEMPERATURE (°C)

FEBRUARY 1 – APRIL 10, 1993



USUALLY COLD CONDITIONS GRIP EASTERN MEDITERRANEAN BASIN *During the last weeks, temperatures averaged as much as 3°C below normal across the region, with the largest negative artures reported in central Greece. Subfreezing temperatures penetrated as far south as southern Sicily ! southwestern Turkey. Although February began with near normal temperatures, cold air repeatedly rspread the eastern Mediterranean during the past two months.*

UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

FOR THE WEEK OF APRIL 4 – 10, 1993

A pair of slow–moving frontal systems spread eavy rain from the southeastern Plains to the Atlantic coast, velling rivers and causing minor flooding. Four to seven ches inundated much of the Mississippi Delta while four to ve inches saturated portions of the southern Appalachians id central Piedmont. Violent thunderstorms ahead of these stems spawned tornadoes, gusty winds, and large hail om southern Texas to the southern Atlantic coast. On onday, a line of thunderstorms produced tornadoes that maged homes and businesses and downed trees and power nes in southern Florida, according to press reports. In Port harlotte, 70 buildings were destroyed or damaged as a ister tore through an area 1.5 miles long and 100 yards ide. Another tornado damaged 16 homes in Manasota, and third damaged two homes in Dade County. At least three ople were killed on Thursday when a tornado roared rough Grande Isle, Louisiana's only inhabited barrier isnd. Elsewhere, Pacific storms again brought heavy rain to e West, with snow in the higher elevations of western ashington, western Oregon, northern California, and the ntral Rockies. Up to five inches of rain drenched the Oren coastline while up to a foot of snow buried portions of e Colorado Rockies.

At the beginning of the week, showers and thunderorms associated with a frontal system dumped heavy rain om the southeastern Plains to the Southeast. The system awned intense thunderstorms over the Southeast on onday, with up to twelve tornadoes and strong wind gusts using extensive damage in southern Florida, and basell–sized hail pelting southern Georgia. Farther west, scated rain and snow spread from northern California and the rthern Rockies into the central Rockies and northern ains. On Tuesday, a second frontal system took shape ong the central and southern High Plains as heavy snow ntinued to fall on the central Rockies.

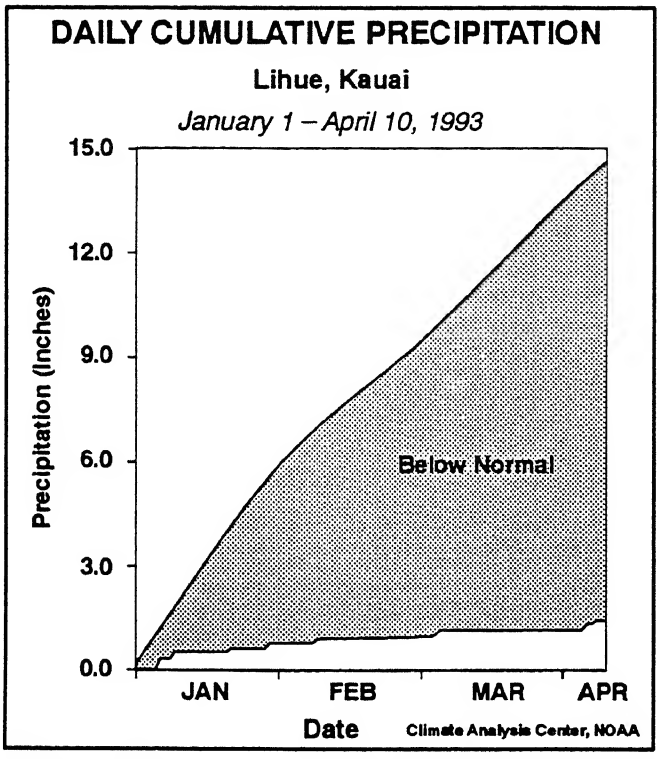
During the middle of the week, the system in the gh Plains edged eastward as thunderstorms produced ge hail in the central Plains and spawned tornadoes in the uthern Plains. Meanwhile, up to seven inches of snow anketed the Plains from southeastern Wyoming to central uth Dakota. During the latter half of the week, the massive stem moved slowly eastward, spreading rain from the ains and Mississippi Valley to the Atlantic coast at week's d. Severe weather with hail, high wind, heavy rain, and tornadoes hammered the lower Mississippi Valley on Thursday while persistent rains soaked the Southeast, Appalachians, mid–Atlantic, and Northeast on Friday and Saturday. Elsewhere, another cold front brought locally heavy rain to the northern Pacific coast and scattered showers to the Northwest, northern Rockies, and northern Plains. As the week ended, a third Pacific front spread more precipitation into the Northwest.

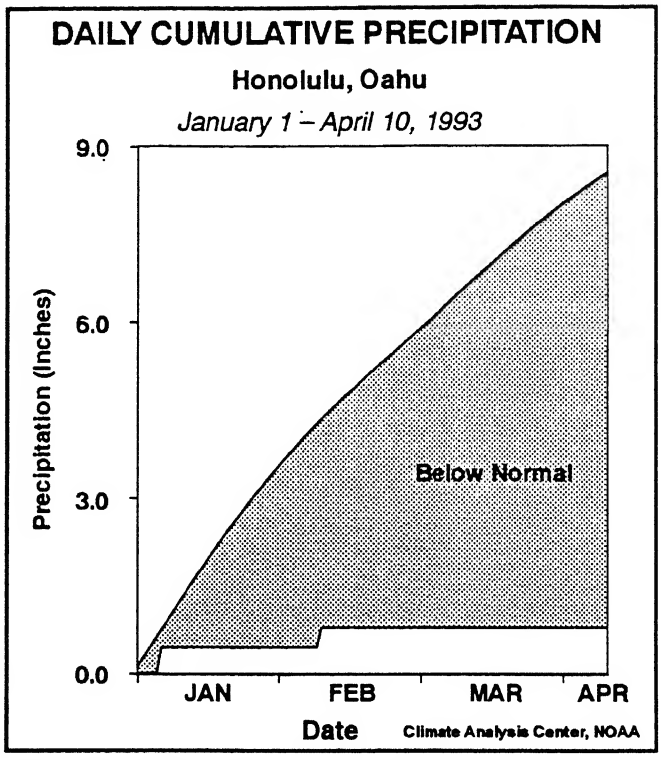
According to the River Forecast Centers, the greatest weekly precipitation totals (over two inches) fell from the western and central Gulf Coast northward to the lower Ohio Valley and over the Appalachians, the Carolinas, and the northern Pacific Coast. In addition, scattered totals exceeding two inches were reported across the central Rockies, the Sierra Nevadas, the southeastern Plains, and the remainders of the Southeast, mid–Atlantic, Northeast, and Pacific Northwest. Light to moderate amounts were measured in the central and northern Plains, the northern Rockies, southern Alaska, eastern Hawaii, and the remainders of the northern half of California, the Northwest, the central Rockies, the southeastern Plains, and the eastern half of the nation. Little or no precipitation was reported in the southern High Plains, the southern Rockies, the Southwest, the Great Basin, southern California, central and northern Alaska, and central and western Hawaii.

Warmer than normal conditions prevailed across the Pacific coastline, central and southern California, the desert Southwest, the Great Basin, the northern Rockies, the northern Plains, the Great Lakes, the upper Ohio Valley, and the Northeast. Weekly departures ranged from +3°F to +7°F in the northern Rockies, northern High Plains, Great Lakes,

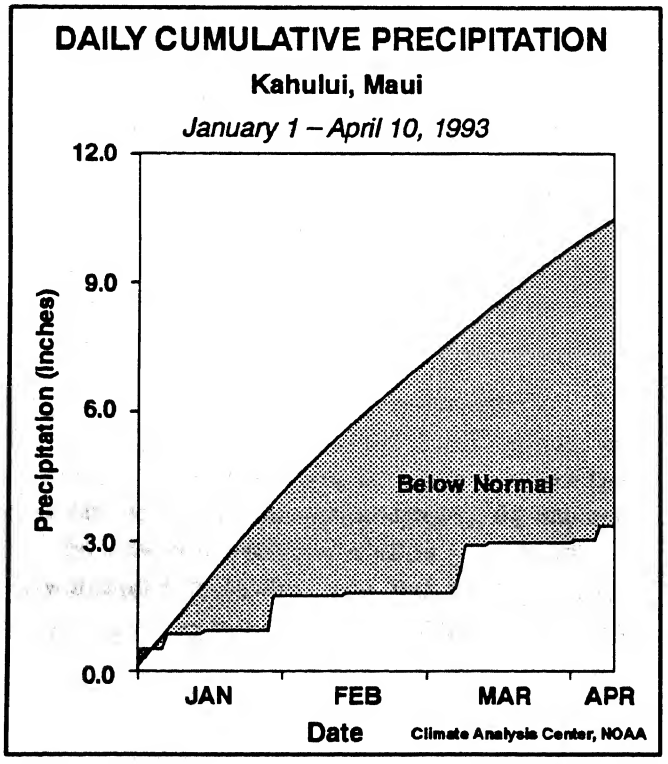
NORTH AMERICAN CLIMATE HIGHLIGHTS FEATURE

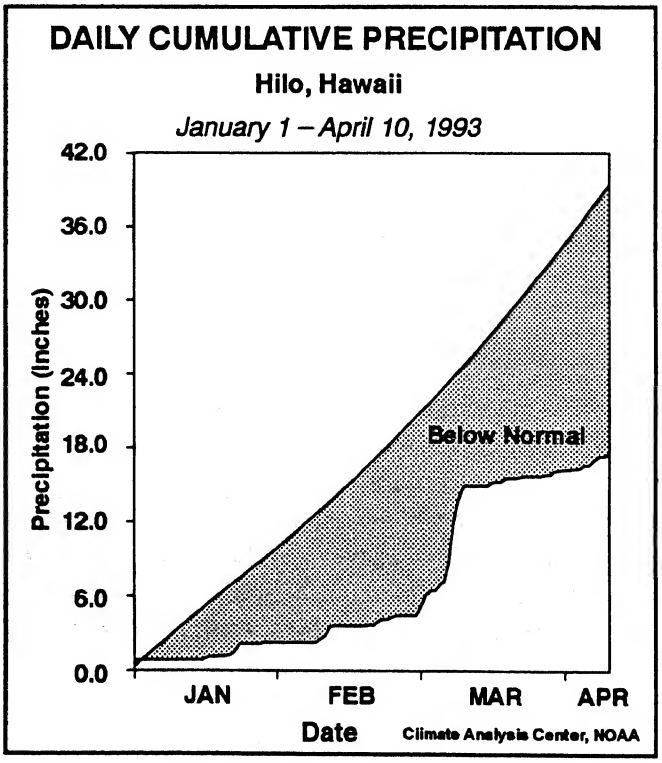
UNUSUALLY DRY ON THE HAWAIIAN ISLANDS





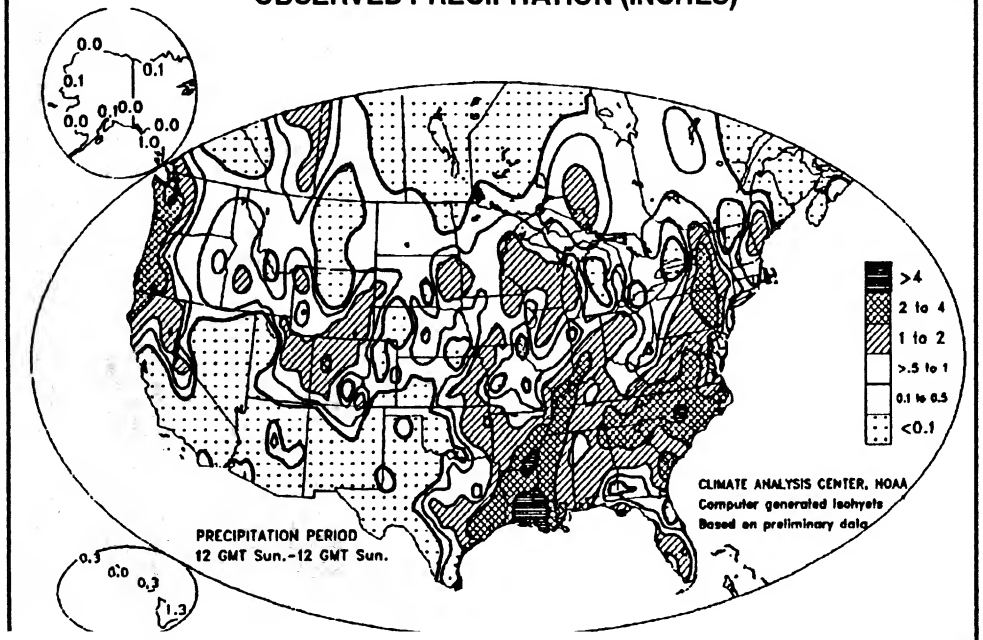
Abnormally dry weather prevailed across the Hawaiian Islands since the beginning of the year. Lihue (top left) and Honolulu (top right) received less than 15% of normal precipitation during the period, generating moisture deficits of 12.82 inches and 7.40 inches, respectively. Kahului (bottom left) reported under 40% of normal and a shortfall of 6.52 inches for the year to date. Even Hilo (bottom right), which is typically very wet, measured totals below half of normal and a rainfall deficit of 21.19 inches since January 1.



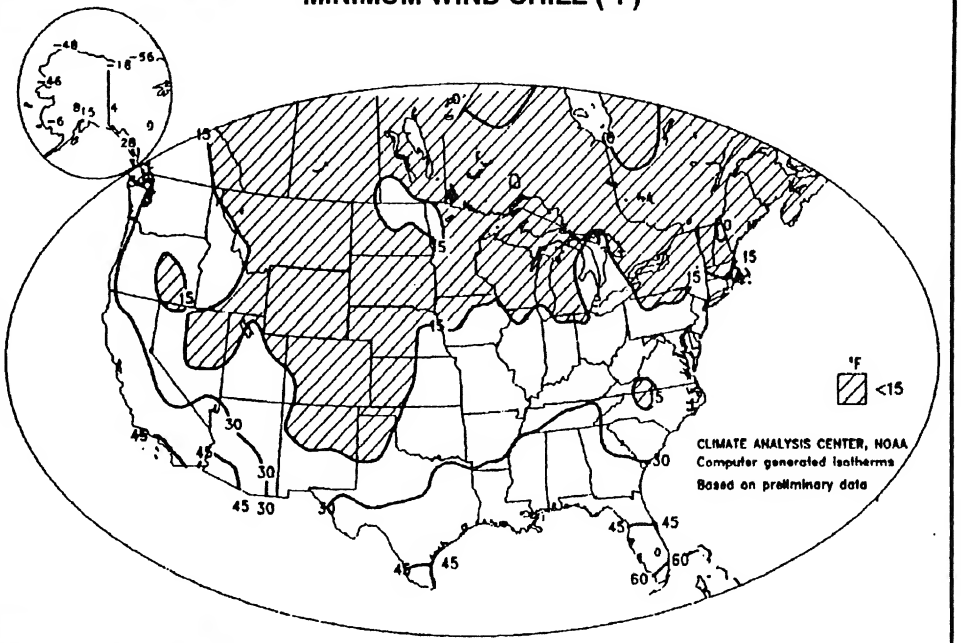


UNITED STATES WEEKLY CLIMATE CONDITIONS *(April 4 – 10, 1993)*

OBSERVED PRECIPITATION (INCHES)



MINIMUM WIND CHILL (°F)



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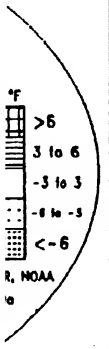
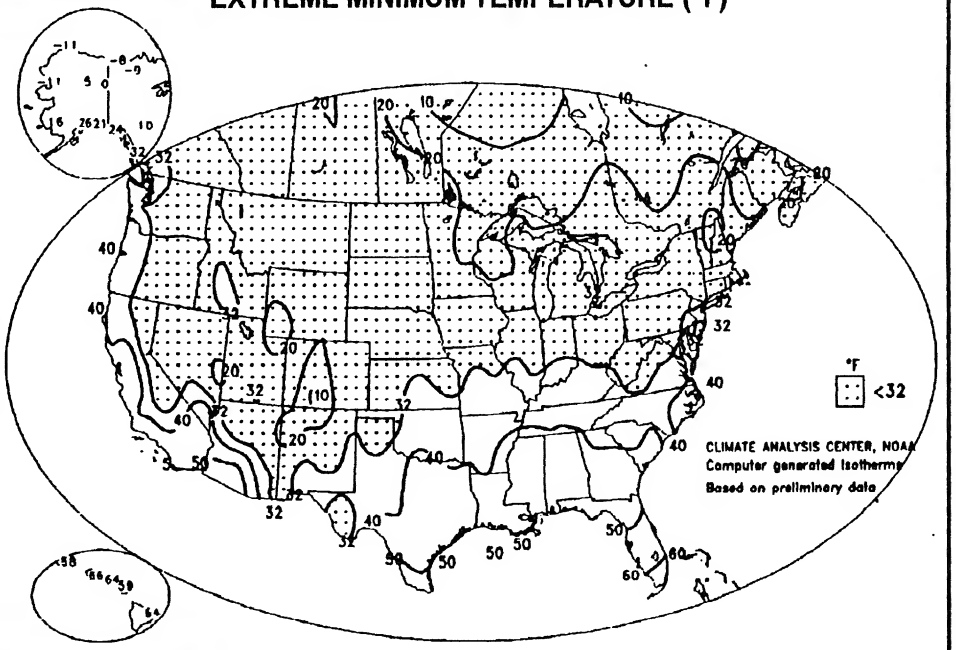
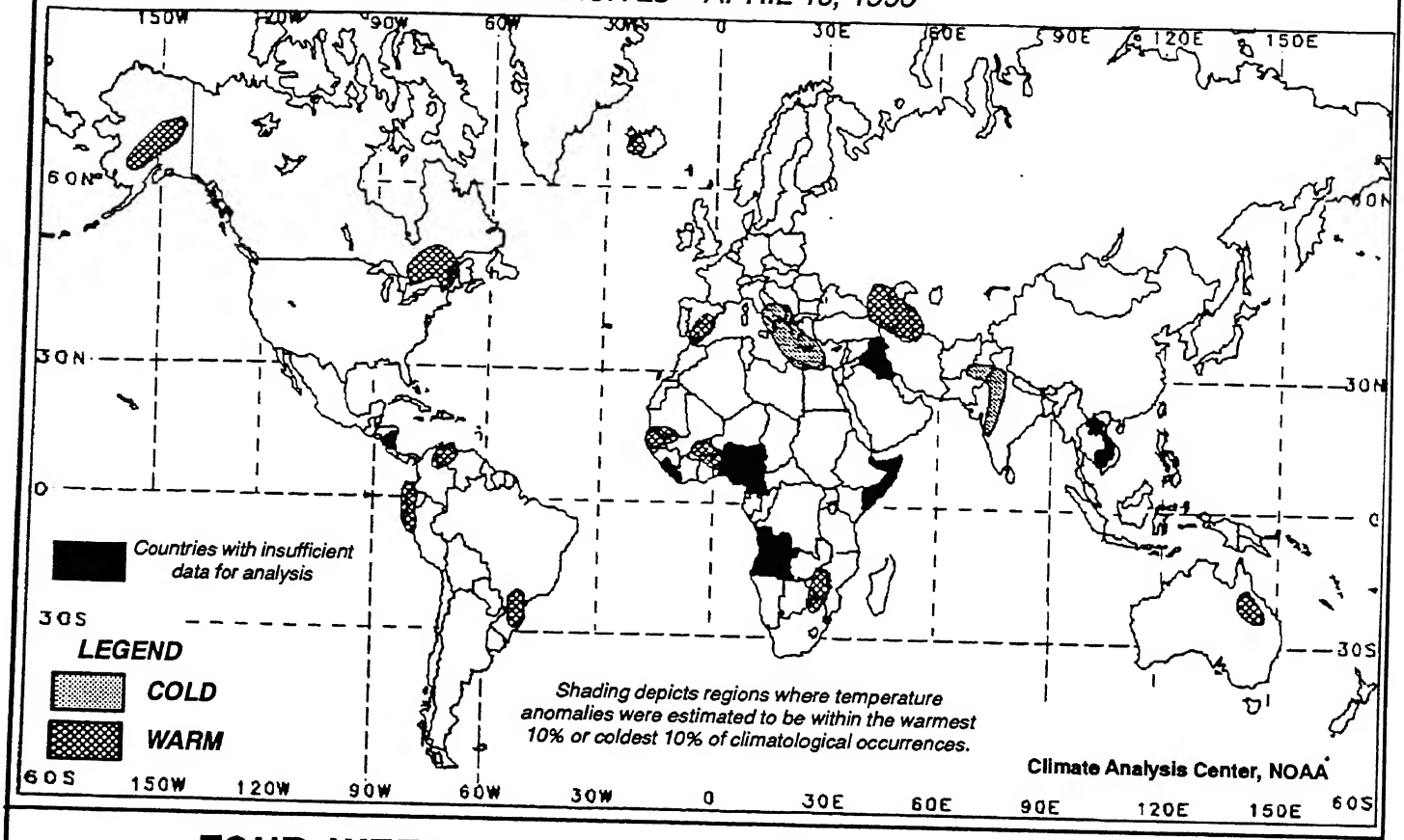


EXTREME MINIMUM TEMPERATURE (°F)



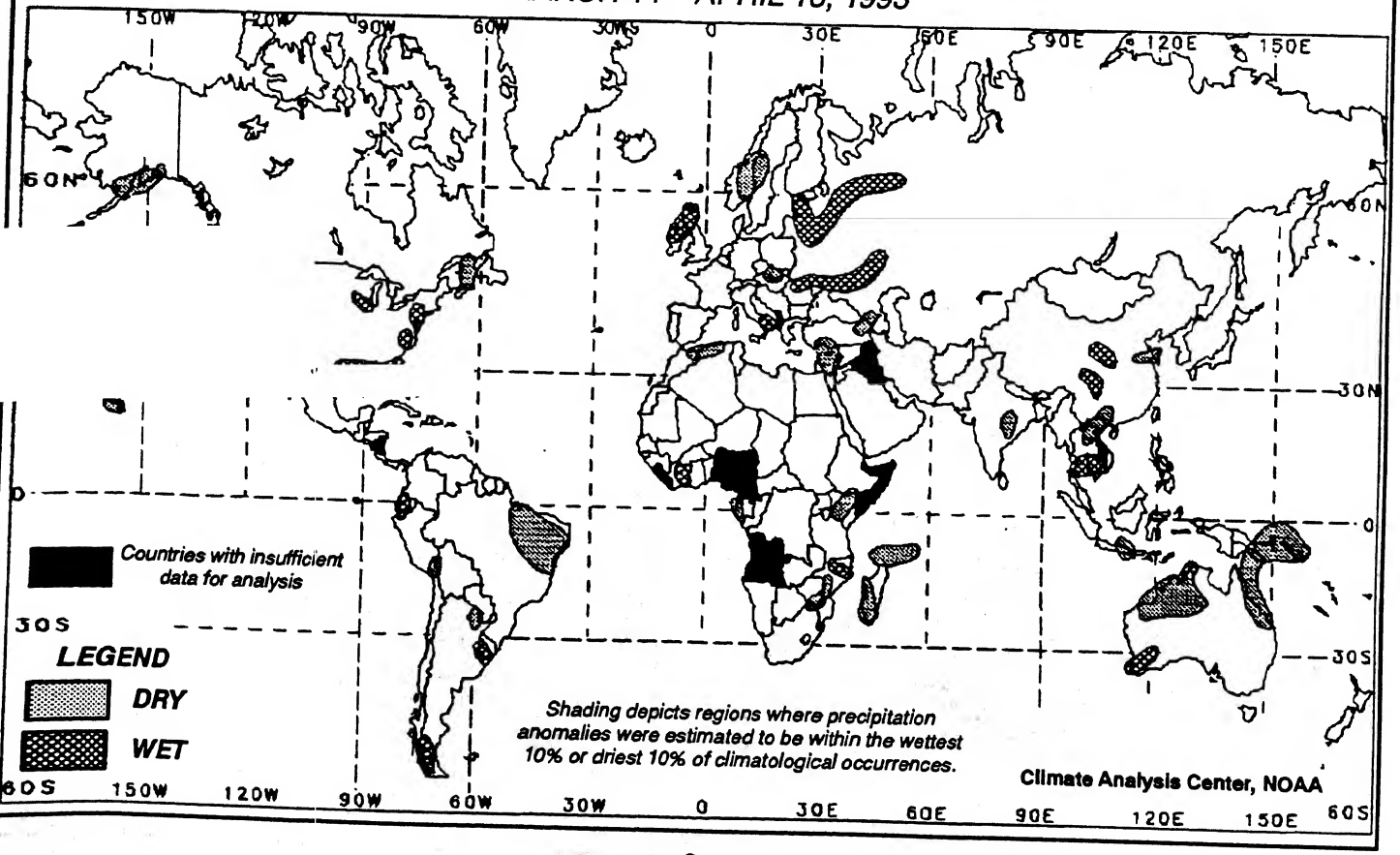
TWO–WEEK GLOBAL TEMPERATURE ANOMALIES

MARCH 28 – APRIL 10, 1993



FOUR–WEEK GLOBAL PRECIPITATION ANOMALIES

MARCH 14 – APRIL 10, 1993



UNITED STATES MONTHLY CLIMATE SUMMARY

MARCH 1993

ıonth opened with stormy weather across much of the nation, ularly the eastern, southern, and western tiers of states. A ; system dumped heavy snow from the southern Intermoun- /est to the central Plains and generated heavy rains across the l Gulf Coast. Up to three feet of snow buried Cuchara, CO four to six inches of rain soaked parts of southern Texas, :rn Louisiana, and southern Mississippi, causing localized ng. Farther west, continued flooding along the Gila River in ıa (due to earlier rain) caused considerable crop damage, al- ı only light precipitation was reported. Meanwhile, a power- rm buffeted the East, generating heavy rain along the Atlan- astal Plain, snow across the Piedmont, Appalachians, and :rn New England, hurricane–force wind gusts, and extensive ng. Strong winds downed numerous trees and power lines in ntral Appalachians, mid–Atlantic, and southern New En- Severe thunderstorms erupted across the Southeast, spawn- nadoes in Florida, while colder than normal air overspread ıf the 48 contiguous states.

:ond week of March featured a massive winter storm that :d the eastern third of the nation. A rapidly–intensifying low l across the Gulf of Mexico and into the panhandle of Flori- nerating heavy rains along the immediate Gulf Coast and snows from northern Louisiana eastward into Georgia. Hur- -force winds and extremely high tides buffeted the eastern oast while a line of thunderstorms associated with the storm ed Florida with severe weather and numerous tornadoes. ɔrm eventually turned northeastward, bringing very heavy rom northern Georgia northward through much of the east- rd of the country. Strong winds buffeted coastal areas from rolinas northward, and record–breaking low barometric res occurred at numerous locations. The storm engendered ɔread blizzard conditions across the Appalachians, northern tlantic, Northeast, and New England, where between one ur feet of snow was reported. The "Blizzard of '93" took han 200 lives, with property damage and storm clean–up xpected to amount to almost a billion dollars, according to eports. Farther west, rapid snowmelt combined with ice produce lowland flooding along many rivers and streams in ıstern Nebraska.

/ cold Arctic air settled over the eastern half of the nation in ce of the "Storm of the Century", and the third week of the opened with around seventy daily and several monthly low ature records established from the Great Plains eastward to antic Coast (page 12). Subfreezing temperatures plunged ntral Texas, the central Gulf Coast, and northern Florida ubzero readings reached the northern Plains, northern Mis- Valley, Great Lakes, and mid–Atlantic. In sharp contrast, ɔnably mild weather prevailed across the Far West, Great ınd Southwest, where temperatures climbed into the eight- n southern California eastward to southern Texas.

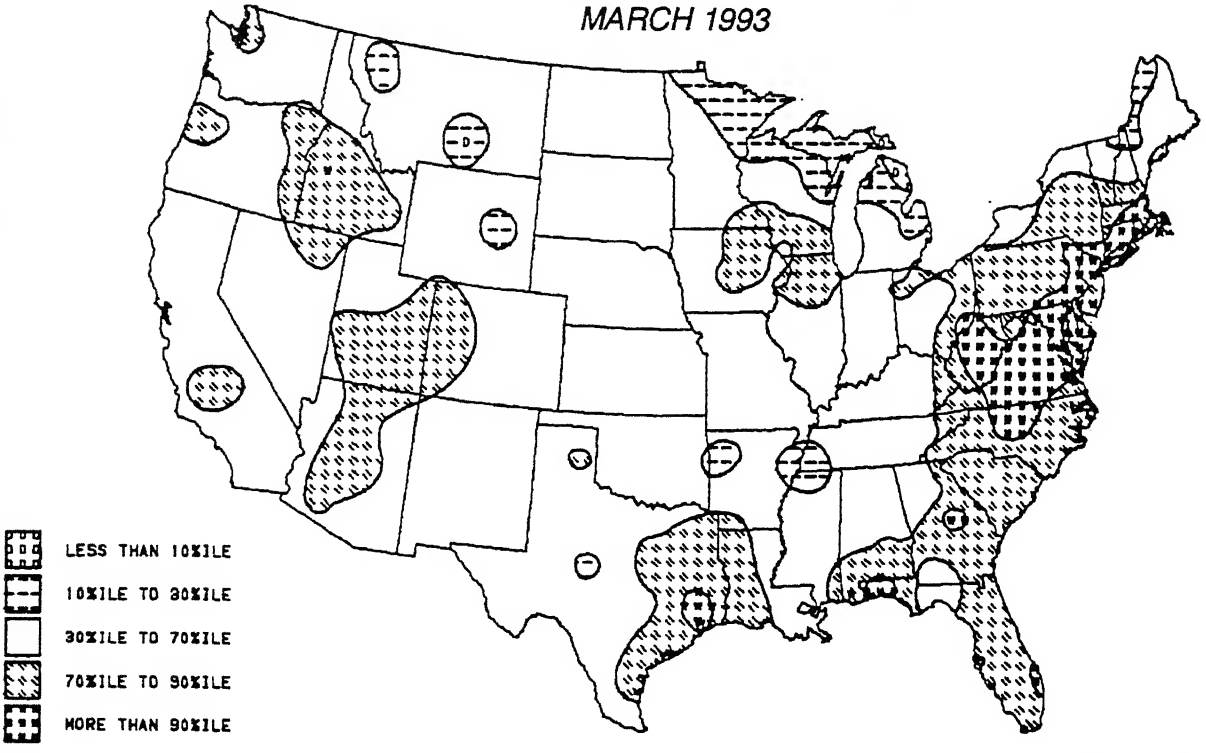
l of March brought wintry weather to the north–central and stern states as up to a foot of snow blanketed portions of the Missouri Valley, the Great Lakes, and New England. Far- uth, heavy rains combined with melting snow to cause g in the central and southern Appalachians and from the lantic to southern New England. Farther west, warm air surged northward into the central and northern Plains and northern Rockies, setting a number of daily high temperature records in Montana, Wyoming, and North Dakota. Much colder air then filtered into the northern Plains and Rockies as a storm developed in the High Plains, allowing over a foot of snow to pile up in parts of Wyoming. Elsewhere, a series of storm systems brought severe thunderstorms, strong wind gusts, hail, heavy rain, and tornadoes across the South from western Texas to the Atlantic Coast. In addition, a powerful Pacific storm spread heavy precipitation across western Oregon and northern California.

According to the River Forecast Centers, heavy precipitation (over four inches) fell on much of the Pacific Coast and most of the Southeast and East (page 8). Abundant precipitation also soaked southern and southeastern Alaska. Based on preliminary calculations from the National Climatic Data Center (NCDC), five of the nine regions reported above median precipitation, with the Southeast and Northeast reporting the 8th and 14th wettest March, respectively, since records began in 1895 (page 9). Three mid–Atlantic states (DE, MD, and VA) experienced the wettest March in 99 years of record while West Virginia and New Jersey observed the second and third wettest such month, respectively. In addition, monthly precipitation totals in three states (CT, NC, and PA) ranked fourth while Rhode Island reported the fifth wettest March on record.

In contrast, subnormal precipitation totals were observed in most of the desert Southwest (except southern Arizona), the Ozarks and middle Mississippi Valley, the northern Rockies, much of the northern Plains, and the upper Great Lakes (page 8). Totals were generally below one inch across the southern and northern Rockies, along the northern tier of states from North Dakota eastward to Michigan, and in most of interior Alaska. Most of Hawaii was quite dry for the third month in a row, with most locations receiving less than two inches. Four of the nine NCDC regions reported submedian precipitation, with the West North Central and the Southwest ranking 8th and 28th, respectively (page 9). Wyoming experienced the fourth driest March since 1895 while Montana, Michigan, and New Mexico observed the
99 years of record.

PRECIPITATION PERCENTILES

MARCH 1993

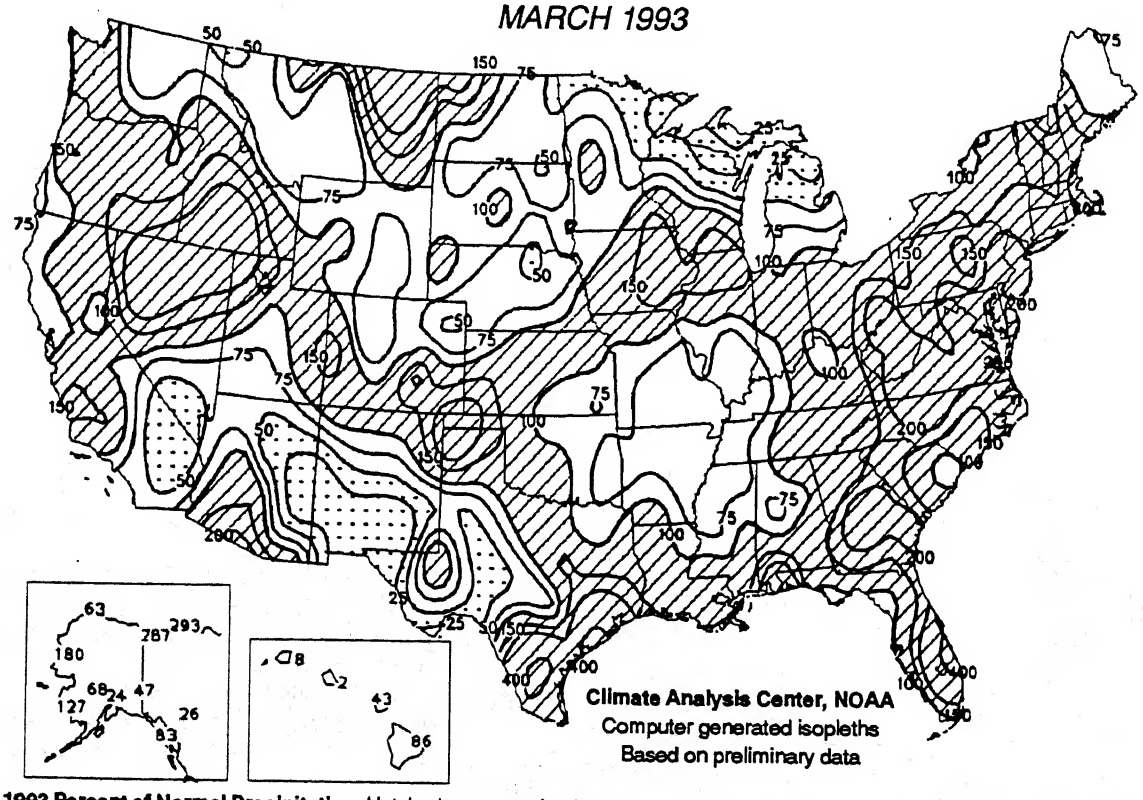


Climate Analysis Center, NOAA

MARCH 1993 Precipitation Percentiles. *A wet month (>70%ile) was observed in the Intermountain West, Gulf Coast, eastern Corn Belt, and most of the East, with totals among the wettest 10% of the historical (1961–1990) distribution across much of the mid-Atlantic and southern New England. Climatologically significant dryness was limited to the upper Great Lakes. Eastern Upper Michigan and northern Lower Michigan reported amounts in the driest 10%ile.*

PERCENT OF NORMAL PRECIPITATION

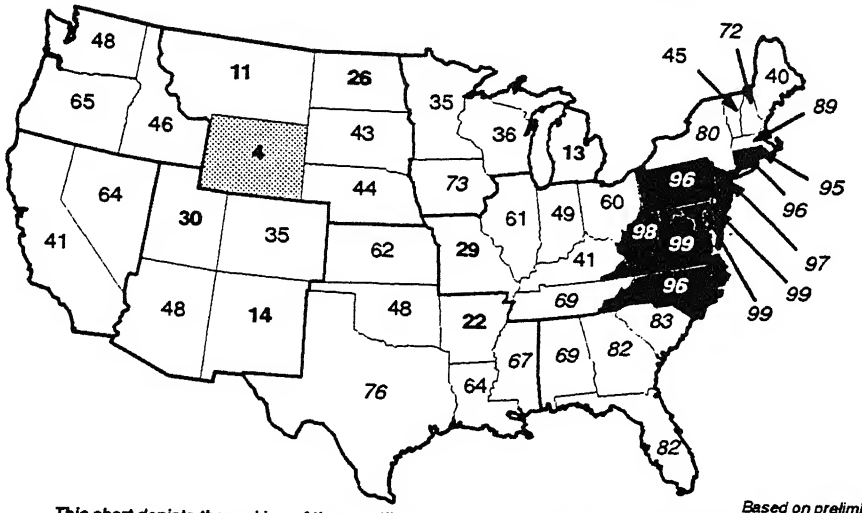
MARCH 1993



MARCH 1993 Percent of Normal Precipitation. Hatched areas received above normal precipitation, and dotted areas reported under half of normal. *Abnormally wet weather dominated much of the country, especially the Great Basin, southern Arizona, southern Texas, and much of the East. Unusually low amounts were restricted to the upper Great Lakes and portions of the southern High Plains and desert Southwest.*

HISTORICAL PRECIPITATION RANKINGS BY STATE

MARCH 1993



LEGEND

- **Among the ten driest**
- *Among the ten wettest*

1 – 33: DRY
34 – 66: NEAR NORMAL
67 – 99: WET

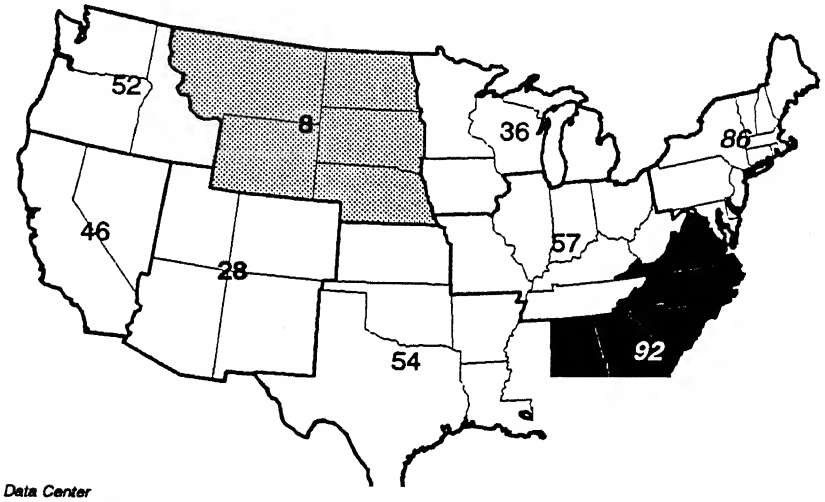
Climate Analysis Center, NOAA

Based on preliminary data generated by the National Climatic Data Center

This chart depicts the ranking of the specific parameter, as measured during the period indicated, with respect to all other such periods on record since 1895.

HISTORICAL PRECIPITATION RANKINGS BY REGION AND NATION

MARCH 1993



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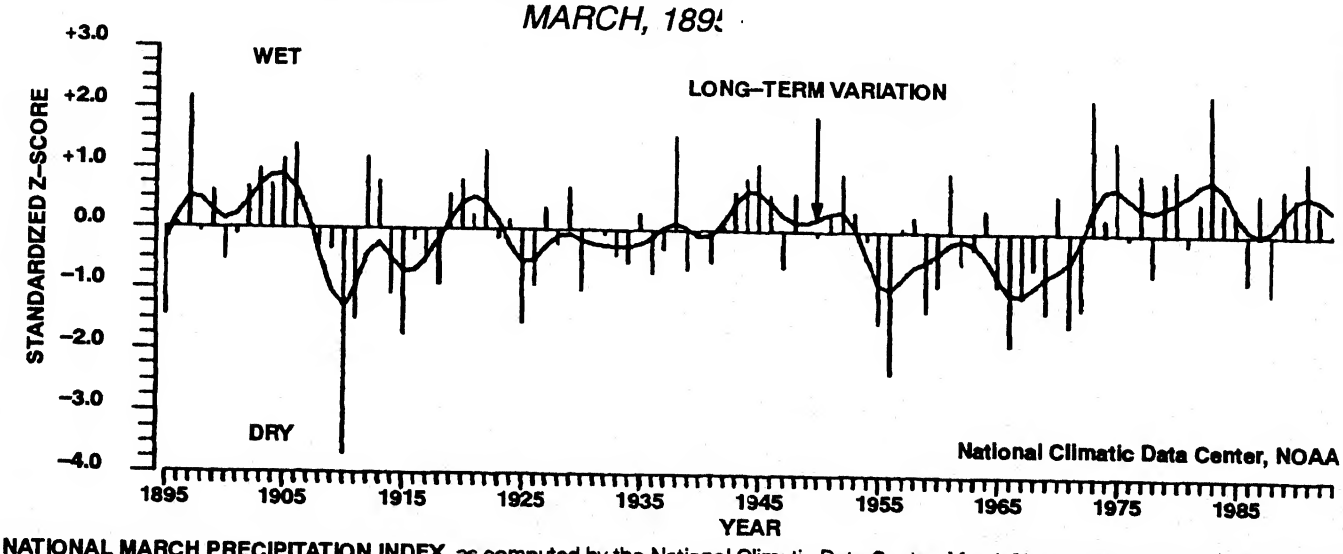
Climate Analysis Center, NOAA

Based on preliminary data generated by the National Climatic Data Center

This chart depicts the ranking of the specific parameter, as measured during the period indic.

U. S. NATIONAL NORMALIZEL

MARCH, 189

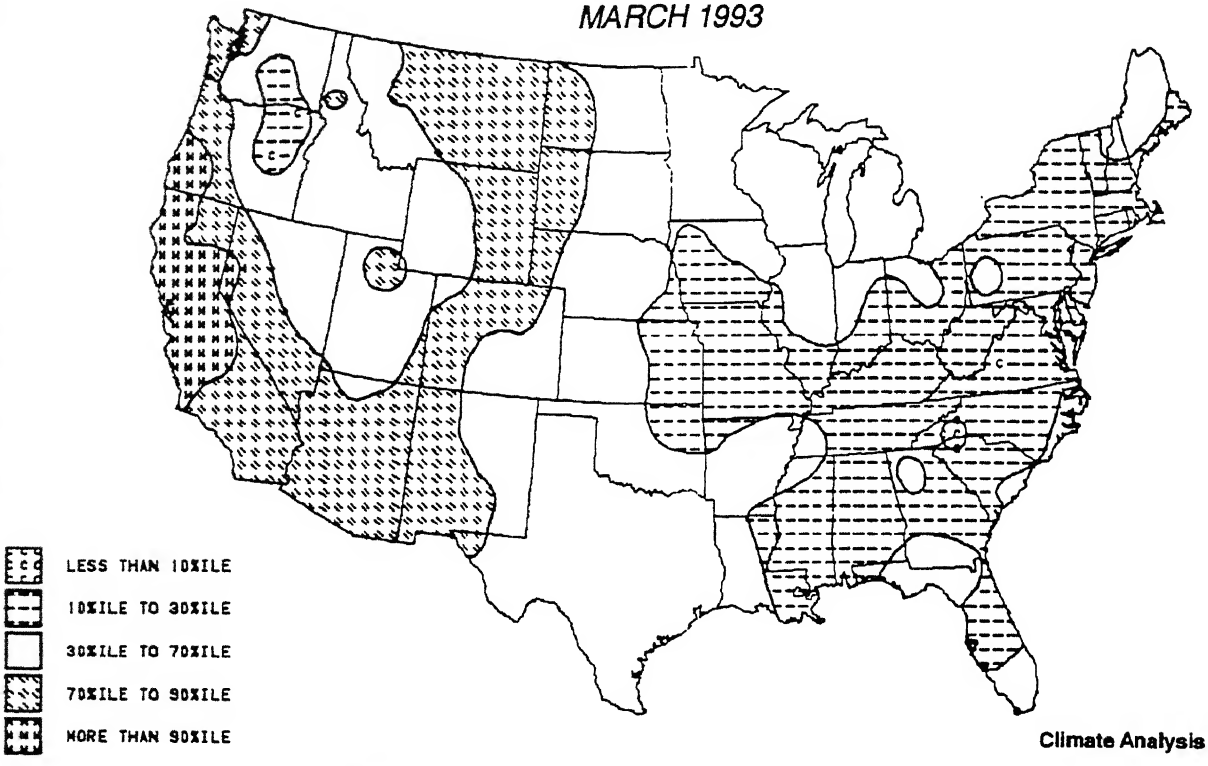


National Climatic Data Center, NOAA

NATIONAL MARCH PRECIPITATION INDEX, as computed by the National Climatic Data Center. *March 1993 ranked as the 32nd wettest March on record. This index takes local normals into account so that regions with large precipitation amounts do not dominate the index value.*

TEMPERATURE PERCENTILES

MARCH 1993

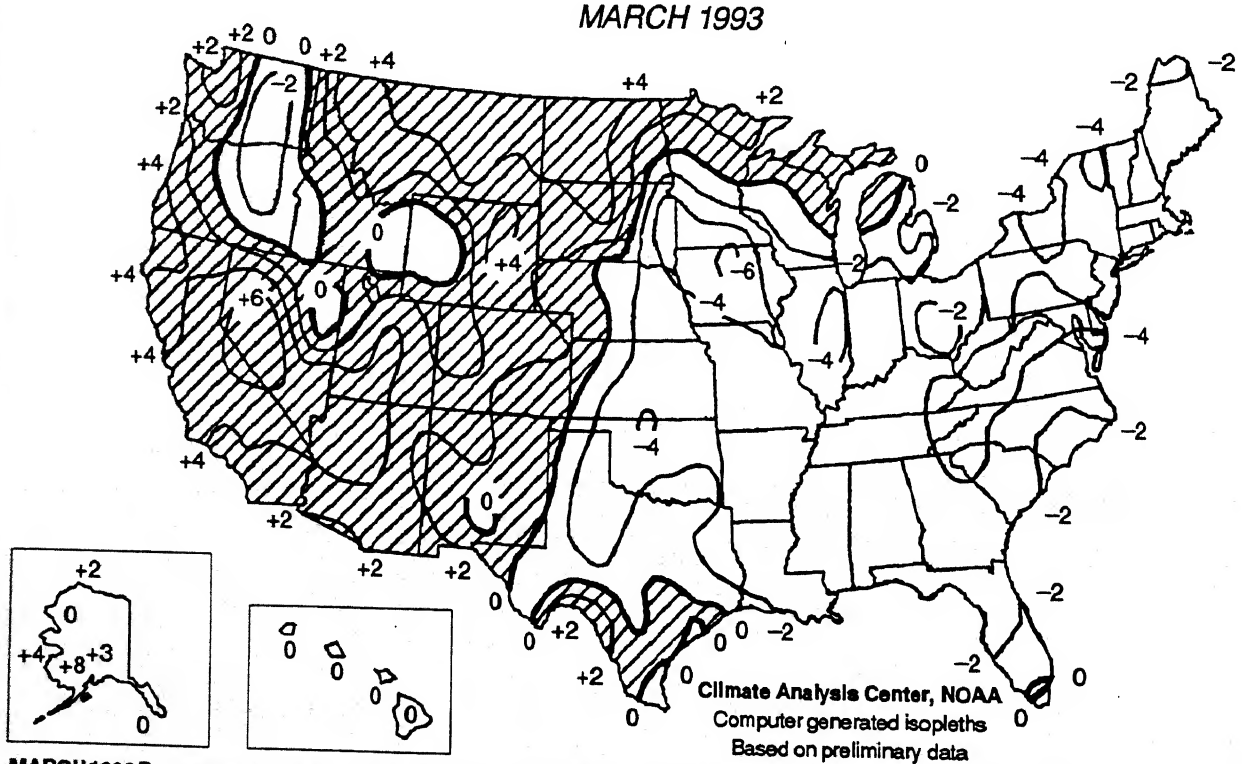


Climate Analysis Center, NOAA

MARCH 1993 Temperature Percentiles. *Unusually cold weather (<30%ile) dominated much of the East while above normal temperatures (>70%ile) prevailed across much of the West. Monthly mean temperatures were among the warmest 10% of the historical (1961–1990) distribution in northern and central California, western Nevada, and southwestern Oregon.*

DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)

MARCH 1993

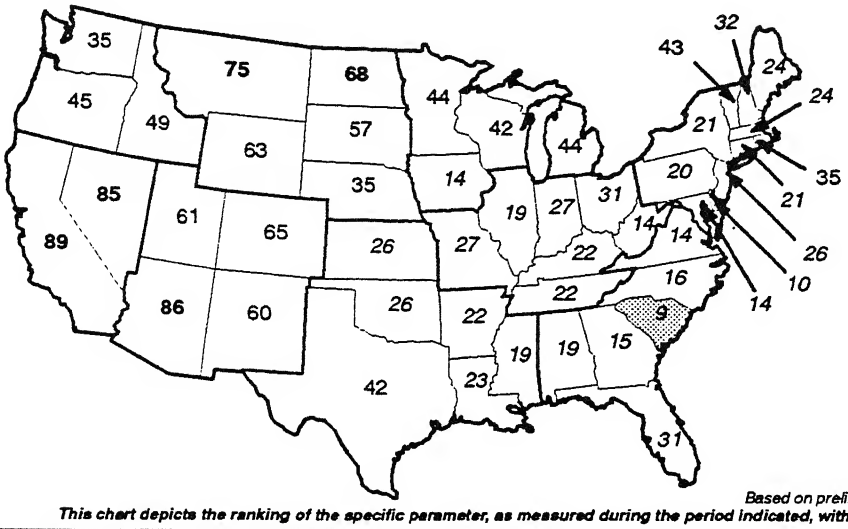


Climate Analysis Center, NOAA
Computer generated isopleths
Based on preliminary data

MARCH 1993 Departure of Average Temperature from Normal (°F). Shaded areas experienced above normal temperatures. *Abnormally cold conditions dominated the eastern half of the country, with monthly mean temperatures averaging 4°F to 6°F below normal in parts of the Corn Belt, the northern and central Appalachians, and the mid-Atlantic. In contrast, above normal temperatures prevailed farther west, with departures of +4°F to +6°F observed across the southwestern states, central Pacific Coast, and northern High Plains.*

HISTORICAL TEMPERATURE RANKINGS BY STATE

MARCH 1993



LEGEND

Among the ten coldest

Among the ten warmest

1 – 33: COLD

34 – 66: NEAR NORMAL

67 – 99: WARM

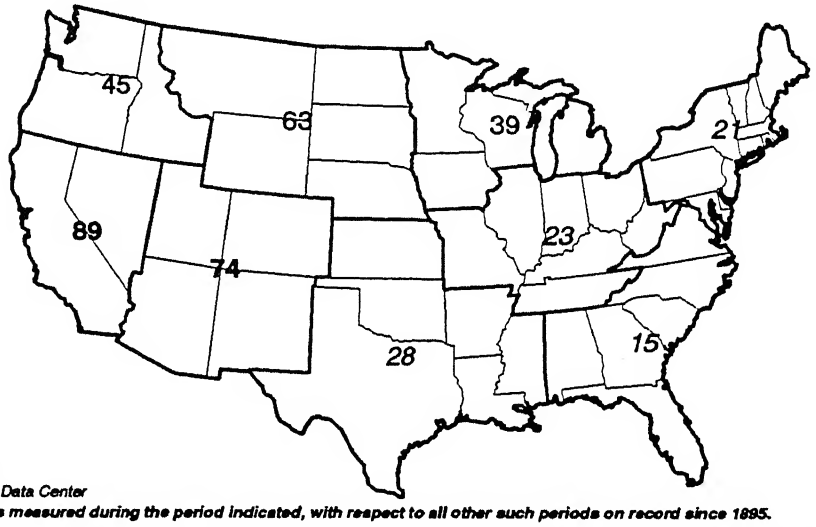
Climate Analysis Center, NOAA

Based on preliminary data generated by the National Climatic Data Center

This chart depicts the ranking of the specific parameter, as measured during the period indicated, with respect to all other such periods on record since 1895.

HISTORICAL TEMPERATURE RANKINGS BY REGION AND NATION

MARCH 1993



LEGEND

Among the ten coldest

Among the ten warmest

1 – 33: COLD

34 – 66: NEAR NORMAL

67 – 99: WARM

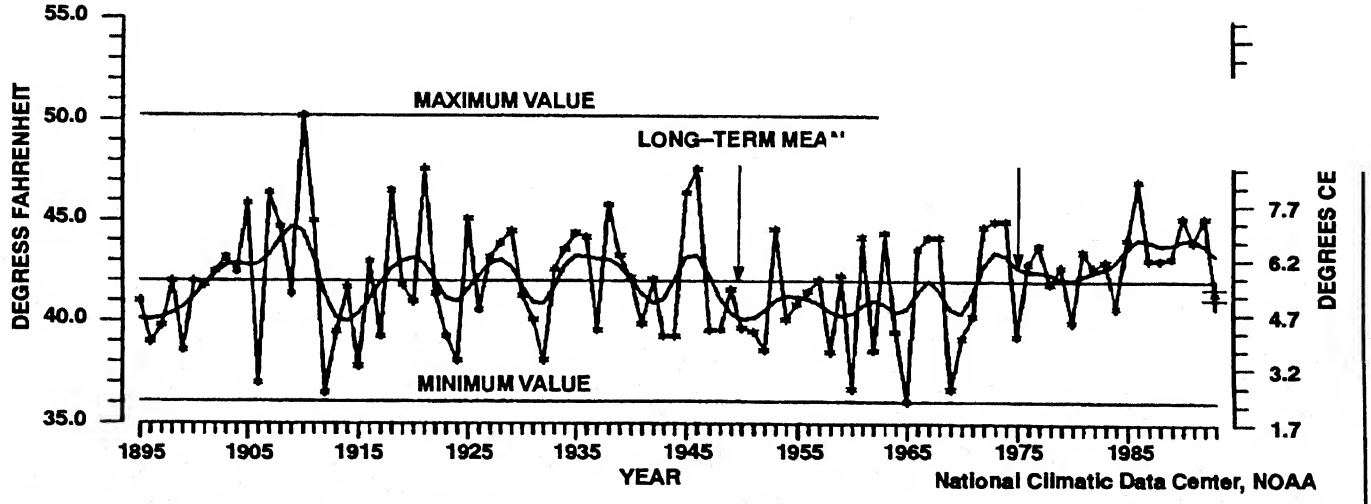
Climate Analysis Center, NOAA

Based on preliminary data generated by the National Climatic Data Center

This chart depicts the ranking of the specific parameter, as measured during the period indicated, with respect to all other such periods on record since 1895.

U. S. NATIONAL TEMPERATURE

MARCH, 1895 – 1993



National Climatic Data Center, NOAA

NATIONALLY AVERAGED MARCH TEMPERATURES, as computed by the National Climatic Data Center. *For the first time since 1984, below normal temperatures covered the nation during March 1993, the 39th coolest on record for the 48 contiguous states.*

TABLE 1. RECORD MARCH PRECIPITATION

TATION	TOTAL (IN)	NORMAL (IN)	PCT. OF NORMAL	RECORD TYPE	RECORDS BEGAN
TLANTIC CITY, NJ	8.82	3.62	243.6	HIGHEST	1943
ALTIMORE, MD	8.12	3.38	240.2	HIGHEST	1950
OANOKE, VA	7.90	3.48	227.0	HIGHEST	1947
ASHINGTON/DULLES, VA	7.65	3.17	241.3	HIGHEST	1963
OUGHTON LAKE, MI	0.64	2.02	31.7	LOWEST	1964
AULT STE. MARIE, MI	0.35	2.30	15.2	LOWEST	1941

NOTE: Trace precipitation is considered ZERO precipitation. Stations with no precipitation are only included if normal precipitation is 0.25 inches or more.
****** – Percent of normal not calculable.*

TABLE 2. RECORD MARCH AVERAGE TEMPERATURES

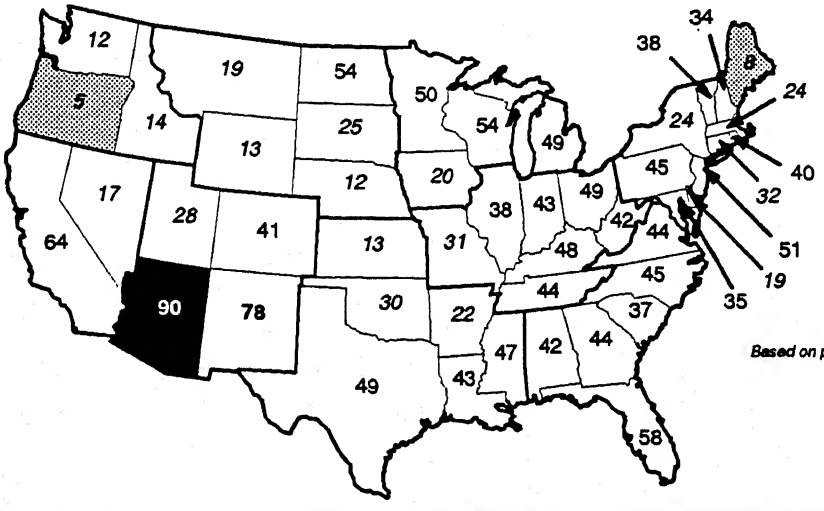
TATION	DEPARTURE (°F)	AVERAGE (°F)	NORMAL (°F)	RECORD TYPE	RECORDS BEGAN
ENO, NV	+5.8	48.6	42.8	HIGHEST	1947

TABLE 3. RECORD MARCH EXTREME TEMPERATURES

TATION	EXTREME (°F)	DATE OCCURRED	RECORD TYPE	RECORDS BEGAN
ALENTINE, NE	85	March 25	HIGHEST	1956
APID CITY, SD	82	March 26	HIGHEST	1943
LASGOW, MT	79	March 23	HIGHEST	1955
HERIDAN, WY	77	March 24	HIGHEST	1940
AVRE, MT	75	March 23	HIGHEST	1961
AIRBANKS, AK	53	March 31	HIGHEST	1930
AHULUI, MAUI, HAWAII	52	March 12	LOWEST	1954
OBILE, AL	21	March 14	LOWEST	1943
ONTGOMERY, AL	17	March 14	LOWEST	1944
REENVILLE, SC	11	March 15	LOWEST	1963
OANOKE, VA	9	March 15	LOWEST	1948
IRMINGHAM, AL	2	March 14	LOWEST	1944
SHEVILLE, NC	2	March 15	LOWEST	1965
ENDLETON, OR	1	March 1	LOWEST	1935
INGHAMTON, NY	–7	March 19	LOWEST	1952

THREE–MONTH HISTORICAL TEMPERATURE RANKINGS BY STATE

JANUARY – MARCH 1993



LEGEND

Among the ten coldest

Among the ten warmest

1 – 33: COLD

34 – 66: NEAR NORMAL

67 – 99: WARM

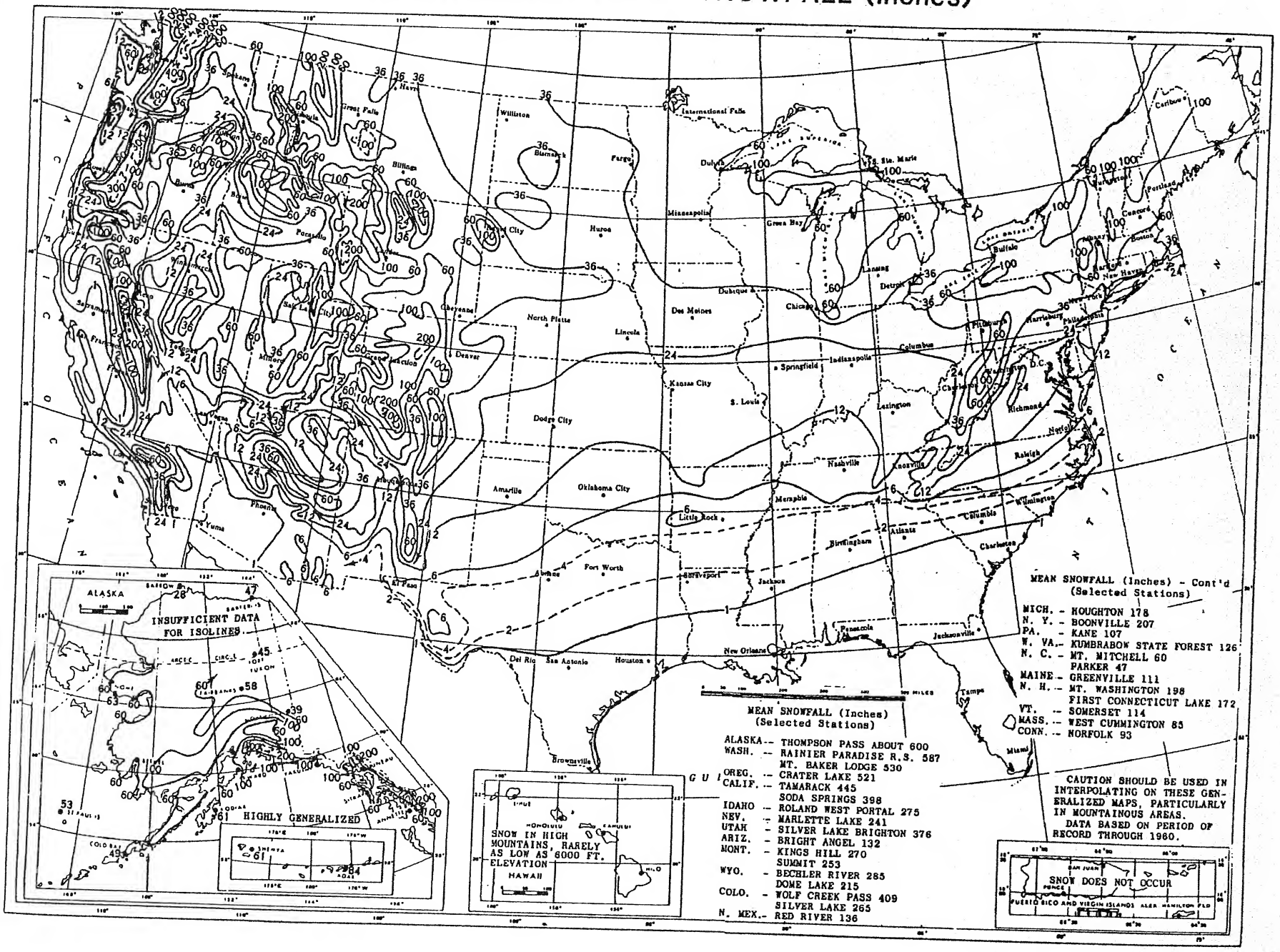
Based on preliminary data generated by the National Climatic Data Center

Climate Analysis Center, NOAA

This chart depicts the ranking of the specific parameter, as measured during the period indicated, with respect to all other such periods on record since 1895.

RST THREE MONTHS OF 1993 AVERAGE SOMEWHAT COOLER THAN NORMAL. *Submedian temperatures were re-ted in 40 of the 48 contiguous states, with Oregon and Maine ranking 5th and 8th coolest, respectively, since records began in 1895. the nation as a whole, January – March 1993 was the 26th coldest such period in the 99–year historical distribution. Monthly mean peratures were above median in only eight states (AZ, CA, FL, MN, NJ, NM, ND, WI), with Arizona experiencing the 10th warmest h period in the last 99 years.*

MEAN ANNUAL TOTAL SNOWFALL (Inches)



Revised 1966